5/20:

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: Eric Fowler	Date: 5/13/25
Email address: fowler@fresh-energy.org	Model Code: 2024 IRC
Telephone number: 507-933-0393	Code or Rule Section: IRC Chapter 3
Firm/Association affiliation, if any: Fresh Energy	

Code or rule section to be changed: Add Section R333

Intended for Technical Advisory Group ("TAG"):

General Information	Yes	<u>No</u>	
A. Is the proposed change unique to the State of Minnesota?		\boxtimes	
B. Is the proposed change required due to climatic conditions of Minnesota?		\boxtimes	
C. Will the proposed change encourage more uniform enforcement?	\boxtimes		
D. Will the proposed change remedy a problem?	\boxtimes		
 E. Does the proposal delete a current Minnesota Rule, chapter amendment? F. Would this proposed change be appropriate through the ICC code 		\boxtimes	
development process?	\boxtimes		

Proposed Language

1. The proposed code change is meant to:

Change language contained the model code book? If so, list section(s). Appendix NE

Change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

delete language contained in the model code book? If so, list section(s).

delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

 \boxtimes add new language that is not found in the model code book or in Minnesota Rule.

2. Is this proposed code change required by Minnesota Statute? If so, please provide the citation.

Not directly, however, the State Building Code is established for safety and wellbeing, and to promote the "use of modern methods, devices, materials and techniques." Preparing buildings for the trend in consumer adoption of EVs (which are charged mostly in the home) is directly responsive to the statutory purpose of the code, especially given the fire hazard of makeshift charging with NEMA 14-50 outlets installed to serve dryers, but ill-equipped to safely serve EVs.

Minimum requirements for EV ready and capable parking spaces in commercial and multifamily buildings passed during the 2023 legislative session.

 Provide specific language you would like to see changed. Indicate proposed new words with <u>underlining</u> and strikethrough words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes.

Adopt Appendix NE (Re) Electric Vehicle Charging Infrastructure from the 2024 IRC as amended below, incorporating definitions, and adding remaining content to a new section: R333

Definitions.

AUTOMOBILE PARKING SPACE. A space within a building or private or public parking lot, exclusive of driveways, ramps, columns, office and work areas, for the parking of an automobile.

ELECTRIC VEHICLE (EV). An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, and electric motorcycles, primarily powered by an electric motor that draws current from a building electrical service, EVSE, a rechargeable storage battery, a fuel cell, a photovoltaic array, or another source of electric current.

Electric Vehicle Capable Space (EV Capable Space). A designated automobile parking space that is provided with electrical infrastructure such as, but not limited to, raceways, cables, electrical capacity, a panelboard or other electrical distribution equipment space necessary for the future installation of an EVSE load of 6.2 kVA or greater, including electrical panel capacity and space to support a circuit, and raceways, both underground and surface mounted.

Electric Vehicle Ready Space (EV Ready Space). An <u>A designated</u> automobile parking space that is provided with a branch circuit <u>terminating in</u> and an outlet, junction box or receptacle that will support an installed EVSE load of 6.2 kVA or greater.

Electric Vehicle Supply Equipment (EVSE). Equipment for plug-in power transfer, including the ungrounded, grounded, and equipment grounding conductors, and the Electric Vehicle connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the Electric Vehicle.

Electric Vehicle Supply Equipment Installed Space (EVSE Space). An automobile parking space that is provided with a dedicated EVSE connection.

Section R333 Electric Vehicle Charging Infrastructure

<u>R333.1 NE101.2 (RE101.2)</u> Electric vehicle power transfer infrastructure.

New residential automobile parking spaces for residential buildings shall be provided with electric vehicle power transfer infrastructure in accordance with Sections <u>R333.1</u> <u>NE101.2.1</u> through <u>R333.6</u> <u>NE101.2.5</u>.

R333.2 NE101.2.1 (RE101.2.1) Quantity.

New one- and two-family dwellings and townhouses with a designated attached or detached garage or other on-site private parking provided adjacent to the dwelling unit shall be provided with one EV capable, EV ready or EVSE space per dwelling unit. <u>Where</u> Exceptions R333.2.1 or R333.2.2 apply, raceway or cable assembly requirements under R333.3 for EV Capable Spaces remain in effect.

Exceptions:

1. Where the local electric distribution entity certifies in writing that it is not able to provide 100 percent of the necessary distribution capacity within 2 years after the estimated certificate of occupancy date, the required EV charging infrastructure shall be reduced based on the available existing electric distribution capacity.

2. Where substantiation is approved that meeting the requirements of Section **<u>R333.6</u>** will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the builder or developer by more than \$450 per dwelling unit.

R333.3 NE101.2.2 (RE101.2.2) EV Capable Spaces.

Each EV capable space used to meet the requirements of Section <u>R333.2</u> <u>NE101.2.1</u> shall comply with all of the following:

- A continuous raceway with a minimum of ³/₄ inch internal diameter or cable assembly shall be installed between a suitable panelboard or other on-site electrical distribution equipment and an enclosure or junction box outlet located within 6 feet (1828 mm) of the EV capable space.
 - 1. Exception: the raceway or cable assembly and the enclosure or junction box are not required where the electrical distribution equipment or panelboard is located in the same room as the EV capable space.
- 2. The installed raceway or cable assembly shall be sized and rated to supply a minimum circuit capacity in accordance with Section <u>R333.6</u>. <u>NE101.2.5</u>.
- 3. The electrical distribution equipment to which the raceway or cable assembly connects shall have sufficient dedicated space and spare electrical capacity for a two-pole circuit breaker or set of fuses.
- 4. The electrical enclosure or outlet and the electrical distribution equipment directory shall be marked: "For future electric vehicle supply equipment (EVSE)."

R333.4 NE101.2.3 (RE101.2.3) EV Ready Spaces.

Each branch circuit serving EV ready spaces shall comply with all of the following:

- Termination at an outlet or enclosure located within 6 feet (1828 mm) of each EV ready space it serves and marked "For electric vehicle supply equipment (EVSE)."
- 2. Service by an electrical distribution system and circuit capacity in accordance with Section <u>R333.6 NE101.2.5</u>.
- 3. Designation on the panelboard or other electrical distribution equipment directory as "For electric vehicle supply equipment (EVSE)."

R333.5 NE101.2.4 (RE101.2.4) EVSE Spaces.

An installed EVSE with multiple output connections shall be permitted to serve multiple EVSE spaces. Each EVSE serving either a single EVSE space or multiple EVSE spaces shall comply with the following:

- 1. Be served by an electrical distribution system in accordance with Section <u>R333.6.</u> <u>NE101.2.5.</u>
- Have a nameplate charging capacity of not less than 6.2 kVA (or 30A at 208/240V) per EVSE space served. Where an EVSE serves three or more EVSE spaces and is controlled by an energy management system in accordance with Section <u>R333.6</u>. <u>NE101.2.5</u>. the nameplate charging capacity shall be not less than 2.1 kVA per EVSE space served.
- 3. Be located within 6 feet (1828 mm) of each EVSE space it serves.
- 4. Be installed in accordance with NFPA 70 and be listed and labeled in accordance with UL 2202 or UL 2594.

R333.6 NE101.2.5 (RE101.2.5) Electrical distribution system capacity.

The branch circuits and electrical distribution system serving each EV capable space, EV ready space and EVSE space used to comply with Section <u>R333.2</u> <u>NE101.2.1</u> shall comply with one of the following:

- 1. Sized for a calculated EV charging load of not less than 6.2 kVA per EVSE, EV ready or EV capable space. Where a circuit is shared or managed, it shall be in accordance with NFPA 70.
- 2. The capacity of the electrical distribution system and each branch circuit serving multiple EVSE spaces, EV ready spaces or EV capable spaces designed to be controlled by an energy management system in accordance with NFPA 70 shall be sized for a calculated EV charging load of not less than 2.1 kVA per space. Where an energy management system is used to control EV charging loads for the purposes of this section, it shall not be configured to turn off electrical power to EVSE or EV ready spaces used to comply with Section <u>R333.2 NE101.2.1</u>.
- 4. Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.

Not necessarily, though all installations will also need to be Electric Code compliant.

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)

Overview

Electric vehicle adoption is on the rise in Minnesota, and across the country, as options expand, battery technology improves, and upfront

prices come closer to gasoline-powered vehicles.

While the simplest option to charge at home for many EV owners will be the existing NEMA 14-50 dryer outlet, such outlets represent the least safe option. Preparing homes for straightforward retrofits with an EV Capable requirement will open the door to affordable, safe Level 2 charging, along with numerous added benefits to residents and the grid.

The growth of EVs is exponential, not linear. This shift in transportation also brings a shift in home energy use. For many, the garage is the new gas station, and Minnesota residents will be less safe and spend more money if we do not





prepare for this new reality. 80% of EV charging in the US happens at home, not at public chargers.¹ By preparing new homes with consumer options in mind, the Department will reduce the burden of costly retrofits post-construction, and maintain a code that provides for the "use of modern methods, devices, materials and techniques," as required by statute. It will also reduce the risk of shock, fire, and other hazards from makeshift workarounds such as plugging an EV into a dryer outlet using a NEMA 14-50 extension cord that was not designed for the electrical or physical demands of EV charging.

Background

This is an updated version of a code change proposal first presented to the Residential Energy TAG on January 2, 2024 as a requirement for EV Ready parking. Advocates have since incorporated feedback to allow conduit instead of pre-wiring, reducing the requirement from EV Ready to EV Capable. This version also adds an exemption where the electric panel is already in the garage, as suggested at a previous meeting, and incorporates flexibility to work with a local utility in case of grid constraints, as provided in the newest model language: 2024 IRC Appendix RE.

On February 26, 2024, the Residential Energy TAG voted narrowly (7-6) to approve an updated EV Capable CCP for inclusion in the IECC 2021. On April 7, 2025, the Residential Energy TAG was split (5-5) on the EV Capable CCP, with some indicating they would support a conduit-only version that did not require reservation of electric panel space.

This proposal addresses this feedback by incorporating an exception from the model code where a local utility certifies that it cannot serve the load within a reasonable amount of time, or where the cost to the builder or developer would increase by more than \$450 per dwelling unit.

¹ "Trends in Electric Vehicle Charging – Global EV Outlook 2024 – Analysis," IEA, accessed April 24, 2025, https://www.iea.org/reports/global-ev-outlook-2024/trends-in-electric-vehicle-charging.

This exception strikes a balance without bringing Minnesota out of step with codes and standards, which the Department would do if the code change progressed as a conduit-only EV Capable requirement. No other state's basic definition of EV Capable parking is conduit only without electrical capacity. Minnesota Statute defines EV Capable parking as "a designated automobile parking space that has electrical infrastructure, including but not limited to raceways, cables, electrical capacity, and panelboard or other electrical distribution space necessary for the future installation of an electric vehicle charging station."²

It would not serve Minnesotans nor our building professionals to depart from national standards by fully redefining EV Capable parking, or by inventing another incrementally weakened category of EV parking that doesn't exist anywhere else. The industry standard categories are: EVSE Installed, EV Ready, and EV Capable. Weakening the base definition of EV Capable, or creating a 4th nonstandard category would bring us out of step with other codes and standards, and create more administrative work justifying a novel deviation from the model IRC.

Safety

As EV adoption rises, so too does at home charging. This will continue whether or not the Department requires EV Capable parking in new construction.

What the Department can impact is the safety (specifically fire and shock danger) and affordability of EV charging when residents plug in at home. Without preparing modern homes for modern vehicles, many residents will plug their EVs into NEMA 14-50 outlets that are not designed for the consistent, high loads, or for the frequency of plugging and unplugging. Unlike hard-wired chargers, these outlets also pose the risk of shock due to the possibility of exposed pins. Finally, if located far away from parking facilities, the dryer outlet will likely be connected to the EV by an extension cord that represents another point of equipment failure if not properly rated, as well as a possible trip hazard.

Other jurisdictions

Minnesota would also be following the lead of numerous other jurisdictions who have included EV ready or capable spaces as part of new residential construction, including California, Illinois, Maryland, and cities in Arizona, Colorado, Delaware, Georgia, Hawaii, Missouri, and Washington as well as Vancouver.³

Meeting market needs

² Sec. 326B.103 MN Statutes Subd. 6a.

³ ICC, "2021 Electric Vehicles and Building Codes: A Strategy for Greenhouse Gas Reduction," published October 2021; see Table 1: Sample EV-Integrated Code Provisions, which lists the jurisdictions that require EV Ready Space(s) for new single-family construction. (<u>https://codes.iccsafe.org/content/ICCEVBCSGGR2021P1/current-approaches-to-ev-integrated-codes</u>).

MD Public Safety Code § 12-205 (2024)

Corinne Reichert, "Illinois Right to Charge Law Requires New Homes and Apartments to Support EV Charging," *CNET*, June 22, 2023, https://www.cnet.com/home/illinois-right-to-charge-law-requires-new-homes-and-apartments-to-support-ev-charging/; City of Atlanta, "City of Atlanta Passes 'EV Ready' Ordinance into Law," November 21, 2017, https://www.atlantaga.gov/Home/Components/News/News/10258/1338?backlist=/.

Rachel Sawicki, "New Castle County Amends Codes to Expand Electric Vehicle Charging," *Bay to Bay News*, October 27, 2021, https://baytobaynews.com/stories/new-castle-county-amends-codes-to-expand-electric-vehicle-charging,62104.

New EV sales in the United States hovered around a quarter million each year from 2016 to 2020, and has since grown to over 1.7 million new vehicles in 2024.⁴

EVs are on track to pass 10% of new vehicle sales soon in the United States, while globally they were almost 15% of sales in 2022.⁵

This trend holds true in Minnesota as well, where 65,679 light-duty EVs were registered as of November 2024, up from 13,015 in February 2020.6 Additionally, about 7%⁷ of all new light-duty vehicle sales in Minnesota were electric in 2024, compared to 1.7% of light-duty vehicle sales in 2020.⁸ Options continue to expand: in 2025, there are over 100 EV models available in the US.⁹ Market arowth is expected to



continue as EV familiarity increases and governments and utilities offer programming to make EV ownership accessible to more market segments. EV prices continue to fall over time¹⁰ and total cost of EV ownership can be lower than that of gasoline vehicles even if federal tax incentives which have bolstered the market in recent years go away.¹¹

Globally, sales projections range from 40% market share by 2030 to over 60% market share by 2030, according to analysis by IEA and RMI.¹²

This market share has been driven in part by lower prices and expanded options for EVs. In 2024, the average price for an EV cost only \$5,800 more than the average price for a new gasoline-

⁴ IEA, Electric car sales, 2012-2024, IEA, Paris https://www.iea.org/data-and-statistics/charts/electric-car-sales-2012-2024, IEA. Licence: CC BY 4.0

⁵ IEA, Electric car registrations and sales share in China, United States and Europe, 2018-2022, IEA, Paris https://www.iea.org/data-and-statistics/charts/electric-car-registrations-and-sales-share-in-china-united-states-and-europe-2018-2022, IEA. Licence: CC BY 4.0

⁶ Current registration number from EvaluateMN, via MnDOT Electric Vehicle Dashboard:

https://www.dot.state.mn.us/sustainability/electric-vehicle-dashboard.html.

 ⁷ <u>Alliance</u> for Automotive Innovation, "Electric Vehicle Quarterly Report: Q3 2024", at page 8. Through Q3 2024.
 ⁸ Sales number from 2020 retrieved from the Electric Vehicle Dashboard hosted by the Alliance for Automotive Innovation.: https://www.autosinnovate.org/EVDashboard

⁹ www.EVInfoList.com

¹⁰ "EVs May Get Cheaper Than Gas Cars As Early As Next Year. Here's Why," InsideEVs, accessed May 13, 2025, https://insideevs.com/news/729153/ev-price-parity-ice-2025-2026/.

¹¹ Ryan Mills, "Fleet Electric Vehicle Total Cost of Ownership with and without Federal Tax Credits," *RMI* (blog), February 24, 2025, https://rmi.org/fleet-electric-vehicle-total-cost-of-ownership-with-and-without-federal-tax-credits/. ¹² "EVs to surpass two-thirds of global car sales by 2030, putting at risk nearly half of oil demand, new research finds," RMI, https://rmi.org/press-release/evs-to-surpass-two-thirds-of-global-car-sales-by-2030-putting-at-risk-nearly-half-ofoil-demand-new-research-finds/

powered passenger vehicle, with options starting as low as \$29,280.¹³ Additionally, as more EVs have entered the new vehicle marketplace, a robust used EV market is growing, which offers access to EVs at a more affordable price for more consumers.

Minnesota residents seeking to charge their electric vehicle at home may face a number of costs, including an electric service upgrade, wiring a 240 volt circuit to the charging location, and installing Electric Vehicle Supply Equipment (EVSE), commonly known as an EV charger. This proposal does not require installation of EVSE, or even wiring the circuit, but preserves consumer choice by requiring space in the electric panel for the circuit, and at minimum, conduit for easy installation of the circuit without digging or other costly, invasive work.

This cost is often unexpected for new EV owners, and spurred Xcel Energy to offer a "home wiring rebate"¹⁴ to help defray the cost and support EV adoption in its service territory, while also supporting EVs in its service territories getting onto a time-varying electricity rate that optimizes use of the electric grid, to the benefit of both the EV owner and general grid customers. Level 2 charging enables EV owners to participate in utility pricing programs that offer lower electricity prices at times of the day when load is lowest on the electric grid (typically overnight, when wind power is also most prevalent), thereby optimizing use of the electric grid and renewable energy, while also saving the EV owner money. A Level 2 Charger is typically required to participate in these beneficial utility programs, as well as future developments that would enable EVs to power a home or return energy to the grid (vehicle-to-home and vehicle-to-grid applications, respectively)¹⁵.

2. Why is the proposed code change a reasonable solution?

This proposal will prepare residents for charging at home as a growing number of Minnesotans opt for electric vehicles. The proposal allows flexibility for builders to provide conduit or to pre-wire for a charger, without requiring the installation of Electric Vehicle Supply Equipment.

3. What other factors should the TAG consider?

Economy wide, EVs advance efficiency significantly, wasting only about 11% of energy compared to the roughly 80% wasted by gasoline powered cars.¹⁶ EVs eliminate a major source of air pollution, with health impacts both local and global. Finally, they give consumers the option to use local sources of energy, including utility scale renewable electricity or even power from a resident's own rooftop or community solar.

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.

This code will only nominally increase costs, at most \$450 per unit, as per the exemption in R333.2.

¹³ <u>Kelly</u> Blue Book, "How Much Are Electric Cars?" posted January 15, 2025. https://www.kbb.com/car-advice/how-much-electric-car-cost/

¹⁴ Xcel Energy's Home Wiring Rebate program approved by the Department of Commerce November 2024. *See* <u>Decision in CIP-23-92</u>

¹⁵ Digitaltrends, "EV bidirectional charging: what it is and how to get it," published October 11,2024 (https://www.digitaltrends.com/cars/ev-bidirectional-charging-what-is-it-how-to-get)

¹⁶ Karin Kirk, "Electrifying Transportation Reduces Emissions AND Saves Massive Amounts of Energy," Yale Climate Connections, August 7, 2022, http://yaleclimateconnections.org/2022/08/electrifying-transportation-reduces-emissions-and-saves-massive-amounts-of-energy/.

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible.

Yes, this proposal provides for significantly safer charging by reducing barriers to installing hardwired Level 2 EVSE.

Providing an EV Capable or EV Ready Space at a Level 2 capacity of 6.2 kVA (between 30 and 40 A on a 208 or 240V circuit) in new construction adds minimal cost. Research by NBI and NRDC estimates the incremental cost at \$115 per space,¹⁷ though rounding up to \$150 to \$250 is likely reasonable as costs have risen.

New construction with 200 amp service is typically more than enough to allow for Level 2 charging.¹⁸ Many homeowners are even able to charge an EV with a 100 amp panel, making the need for more than the relatively standard 200 amp service extremely unlikely, especially in small and modest sized homes.¹⁹

Alternatively, retrofitting homes for Level 2 Charging is much costlier. Estimates vary widely from \$300-\$5,000.²⁰ In Xcel Energy's 2023 Transportation Electrification Plan, they estimated that installing a dedicated 240 V circuit in their Minnesota service territory cost \$880 on average, with costs varying by site but reaching a maximum of \$5,000 for a single project.²¹

Assuming incremental EV ready costs of \$115 compared to retrofit costs of \$880, only 14% of residents would need to install EVSE in their EV ready parking space to realize overall cost savings of \$820 per 100 homes.²² If the (conservative) IEA estimates of 40% EV market share by 2030 are correct, then 20% of residents or more might install EVSE in their EV ready parking space, realizing cost savings of \$6,100 per 100 homes.²³

None of these estimates include savings from the lower operation costs of EVs compared to an internal combustion engine. According to AAA, an electric vehicle (EV) will save roughly \$1,039 per year in total fuel and maintenance costs compared to a comparable gasoline vehicle.²⁴

The estimates above also leave out the impact on human health and healthcare costs that EVs reduce by lowering fossil fuel combustion. Research lead by the Harvard Chan School of Public

¹⁷ Page 22, "Cost Study of the Building Decarbonization Code," NBI, 2022, https://newbuildings.org/resource/coststudy-of-the-building-decarbonization-code/

 ¹⁸ Energy Star, https://www.energystar.gov/products/energy_star_home_upgrade/make_your_home_electric_ready
 ¹⁹ "Yes, it's possible to electrify a home on just 100 amps," Canary Media, December 2023,

https://www.canarymedia.com/articles/electrification/yes-its-possible-to-electrify-a-home-on-just-100-amps ²⁰ "An electric car charging station installation costs \$750 to \$2,600 for a Level 2 charger, 240-volt outlet, wiring, and wall mounting. Some EV charger installations cost \$2,000 to \$5,000 for extensive wiring or if the electrical panel needs upgrading." <u>2023 EV Charging Station Cost | Install Level 2 or Tesla (homeguide.com)</u> updated September 2023

New 240v outlet: "totaling \$300 or so" <u>Cost To Install An Electrical Outlet: GFCI, 220v, 240v – Forbes Home</u> "if you need to mount the system from zero: do the wiring, and install a new service panel and 240 V outlet - add about \$1000 - \$1500 to your estimate" <u>How Much Does It Cost To Install An EV Charger? (jdpower.com)</u> December 2022

²¹ Pg. 52, Xcel Energy, 2023 Integrated Distribution Plan - Appendix H: Transportation Electrification Plan (filed Nov 1, 2023) (<u>link</u>)

 $^{^{22}}$ In a 100 home universe: 100 x \$115 = \$11,500 for all EV ready compared to 14 x \$880 = \$12,320 for retrofit costs. Total saved: 12,320 - 11,500 = \$820.

²³ In a 100 home universe: $100 \times 115 = 11,500$ for all EV ready compared to $20 \times 880 = 17,600$ for retrofit costs. Total saved: 17,600 - 11,500 = 6,100.

²⁴ "\$709 in fuel savings assuming 15,000 miles, and \$330 saved in maintenance, repair, and tires" according to "True Cost of Electric Vehicles," AAA, https://www.aaa.com/autorepair/articles/true-cost-of-ev

Health found that "more than 8 million people died in 2018 from fossil fuel pollution," equating to about 1 in 5 deaths worldwide.²⁵ Across the United States, research published in the journal *Environmental Research: Health* estimated that US oil and gas causes roughly \$77 billion in health impacts every year. The health harms are also local and measurable. Researchers in Rochester, Minnesota studied almost 20,000 people over 11 years and found "significant relationships between asthma exacerbations and residential proximity to traffic."²⁶ By simply making it easier for residents to eliminate nearby sources of fossil fuel pollution, we can continue protecting the health and welfare of Minnesotans inside of buildings and out.

A small investment during new construction will save homeowners substantial future costs, potential shock and fire hazards, and give them more options. Given the market trends identified in the reason statement, it is not a question of whether homes will need EV charging infrastructure, but when. Failing to adopt this proposal would mean saddling future homeowners with less safe homes and substantially higher costs. Instead, the Department should ensure "use of modern methods, devices, materials and techniques" in new residences by adopting this proposal.

3. If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.

Cost will be passed to homeowner and will improve safety, and save cost over a retrofit.

4. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.

This system can be inspected during normal electrical inspection and will increase the cost of compliance.

5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed \$25,000 for any one small business or small city (<u>Minn. Stat. § 14.127</u>)? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.

No, see cost estimates above.

Regulatory Analysis

1. What parties or segments of industry are affected by this proposed code change?

This proposed code change would require additional electrical and/or laborer work.

2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.

 ²⁵ "Fossil fuel air pollution responsible for 1 in 5 deaths worldwide," Harvard Chan School of Public Health, 2021, https://www.hsph.harvard.edu/c-change/news/fossil-fuel-air-pollution-responsible-for-1-in-5-deaths-worldwide/
 ²⁶ Lindgren P, Johnson J, Williams A, Yawn B, Pratt GC. Asthma exacerbations and traffic: examining relationships using link-based traffic metrics and a comprehensive patient database. Environ Health. 2016 Nov 3;15(1):102. doi: 10.1186/s12940-016-0184-2. PMID: 27809853; PMCID: PMC5094142.

There is no other clear policy tool to prepare Minnesota homes for EV charging and avoid steep retrofit costs.

3. What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?

This proposal will prevent fires, shock hazards, and save homeowners the costly burden of upgrading their homes to provide electric vehicle charging.

4. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.

No, although legislation passed in the 2023 Minnesota legislative session requiring adding electric vehicle charging to the commercial code.

***Note: Incomplete forms may be returned to the submitter with instruction to complete the form. Only completed forms can considered by the TAG.

4/22: TABLED for Revision of language.5/6: table until the 5/20 meeting.5/20:

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

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Email address: nick@housingfirstmn.org

Telephone number:612-210-8332

Firm/Association affiliation, if any: Housing First MN

DEPARTMENT OF LABOR AND INDUSTRY

Code or rule section to be changed: (1309) R. 325.9

Intended for Technical Advisory Group ("TAG"): IECC

<u>Gener</u>	al Information	Yes	<u>No</u>
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Date: 3/17/2025

Model Code: IECC

Code or Rule Section: 1309

Topic of proposal: Commissioning

3. Provide *specific* language you would like to see changed. Indicate proposed new words with <u>underlining</u> and strikethrough words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes. Blue language is original, Red is modified.

<u>R 325.8. Forced air heating system verification.</u> Forced air heating systems on new construction dwellings shall be designed in accordance with R325. with Manual J, D and S documentation provided to the building official along with the building permit application. Installed heating systems shall be performance tested to show compliance with design submitted at permit application. The system must perform within the manufacturer's specifications for Total External Static Pressure, Temperature Rise and airflow within plus or minus 20% or 25 CFM (whichever is greater) delivered to each room while on the heating setting, in accordance with R325.8. Testing shall be completed in accordance with industry methods and documentation shall be provided to the building official prior to the issuance of the certificate of occupancy with a copy to remain on site.

R325.8.1 Forced air heating system design. Where a forced air heating system is in installed in new dwellings, the system shall be designed in accordance with Section M1201.1. Design documentation shall be submitted to the building official with the application for building permit. The documentation shall demonstrate the heating equipment is sized in accordance with ACCA Manual S with loads calculated in accordance with ACCA Manual J and the supply and return ducts that are sized in accordance with ACCA Manual D.

R325.8.2 Force air heating system testing. Where a forced air heating system is installed in a new dwelling, the system shall be tested in accordance with industry accepted practices to verify compliance with the submitted design and that the system is able to provide heating to each habitable room as required by section R325.8 while performing within the manufacturer's specifications for total external pressure and temperature rise. Verification of airflow shall be the greater of 25 CFM or +/- 20 percent of the designed airflow rates. A written report of the test results shall be signed by the party conducting the test and provided to the building official before a certificate of occupancy is issued. A copy of the written report shall remain at the dwelling.

Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.

Possible connection to the administrative portions. But that will need to be determined by technical staff.

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.) *Minnesota's home designs are becoming more complex, and homebuilders and their energy raters have reported that with the adoption of the 2024 IECC and beyond, performance path utilization will increase dramatically in MN. As Minnesota moves beyond the IECC standard through 2038, the performance path will be critical in achieving and consideration of affordability in the energy code.*

With performance path adoption increasing, there will be less predictability in the home design and code officials will need to know that these homes are built in accordance with their design. Much of this work is already being done in conjunction with the energy rater during their work in the home.

- Why is the proposed code change a reasonable solution?
 This ensures that the system is installed and functioning as designed; the rater is most qualified to address this issue.
- 3. What other factors should the TAG consider? The amount of training and re-inspections due to the proliferation of the performance path will place stress on the building officials and general contractors. This is the approach taken in several other markets and does function well. This language itself was inspired by Fort Collins.

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.

Depending on how homebuilders and their HVAC trade partners currently structure their contracts, there may be no increased cost specific to this provision.

For homebuilders not currently requiring performance testing of heating systems in their contracts with HVAC trade partners there will be an added cost. The cost of this provision would depend on the size of the system, and with today's marker could range from \$100 - \$300.

While not universal, performance testing heating systems is becoming a standard industry practice among builders, especially with production builders.

When used as part of the performance path, the potential increased cost of performance testing is offset by the others savings provided in the performance path. Fewer materials will be used as the systems will be operating off properly sized equipment. Today, the standard practice is to oversize systems, leading to overbuilt systems which does add cost.

Overall cost warranty claims, costs which can come after the home has been sold, will be reduced with systems that are properly sized and performance tested.

2. If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible.

Increased comfort and operation will be achievable because these systems will be property sized and designed. As the system will operate within manufacture specifications and to optimal conditions, the operating life of the system is likely to be extended, delaying replacement costs.

- If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
 The cost increase, in the situation in which it exists, would be incurred by the homebuilder.
- 4. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.

If there is any added compliance or performance cost increase or decrease, it would de minimis as the inspector would need to review the performance testing results while conducting the final inspection. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed \$25,000 for any one small business or small city (<u>Minn. Stat. § 14.127</u>)? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.
 No, this specific provision does not include any changes that will \$25,000 for any one small business or small city.

Regulatory Analysis

- 1. What parties or segments of industry are affected by this proposed code change? *Homebuilders, Energy Raters, Code Officials.*
- Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.
 No
- What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
 Confusion as the performance path proliferates. Delays in permitting and inspections due to the varying approaches taken. Confusion around possible re-inspections and change orders caused by misinterpretation of the performance path design.
- Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement. *No*

***Note: The information you provide in this code change proposal form is considered Public Data and used by the TAG to consider your proposed modification to the code. Any code change proposal form submitted to DLI may be reviewed at public TAG meetings and used by department staff and the Office of Administrative Hearings to justify the need and reasonableness of any proposed rule draft subject to administrative review and is available to the public.

****Note: Incomplete forms will be returned to the submitter with instruction to complete the form. Only completed forms will be accepted and considered by the TAG. The submitter may be asked to provide additional information in support of the proposed code change.

5/20:

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: C. Scott Anderson

Email address: c.scott.anderson@minneapolismn.gov

Telephone number: 612-246-7303

Firm/Association affiliation, if any: City of Minneapolis

Code or rule section to be changed: R318.2.1

Intended for Technical Advisory Group ("TAG"):

General Information	<u>Yes</u>	<u>No</u>	
A. Is the proposed change unique to the State of Minnesota?	\boxtimes		
B. Is the proposed change required due to climatic conditions of Minnesota?	\boxtimes		
C. Will the proposed change encourage more uniform enforcement?	\boxtimes		
D. Will the proposed change remedy a problem?	\boxtimes		
E. Does the proposal delete a current Minnesota Rule, chapter amendment? F. Would this proposed change be appropriate through the ICC code		\boxtimes	
development process?		\boxtimes	

Proposed Language

1. The proposed code change is meant to:

Change language contained the model code book? If so, list section(s). R318.2.1

Change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

delete language contained in the model code book? If so, list section(s).

delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

 \boxtimes add new language that is not found in the model code book or in Minnesota Rule. R318.2.1

Date: 9/19/24 revised

Model Code: 2024 IRC

Code or Rule Section: R318.2.1

Topic of proposal: footing frost protection and Means of egress door

- Is this proposed code change required by Minnesota Statute? If so, please provide the citation. No
- 3. Provide *specific* language you would like to see changed. Indicate proposed new words with <u>underlining</u> and strikethrough words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes.

Add new section

R318.2.1 Landing at required egress door. Exterior landings at the required egress door shall be supported on footings protected from frost in accordance with R403.1.4.1

 Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
 No

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)

This additional text clarifies the need for frost protection of the landing at the required egress door.

- 2. Why is the proposed code change a reasonable solution? It addresses a life safety issue unique to cold weather climates.
- 3. What other factors should the TAG consider? None

Cost/Benefit Analysis

- Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.
 This is an editorial change and should not impact the cost of construction.
- If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible. No cost change
- If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
 NA
- Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
 No
- 5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed \$25,000 for any one small business or small city (<u>Minn. Stat. § 14.127</u>)? A small business is

any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.

Regulatory Analysis

- 1. What parties or segments of industry are affected by this proposed code change? Architects, Contractors, Developers, Building Owners, Contractors, Building Officials
- 2. Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.
 - No
- What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
 Potential conflicts in code requirements and possible miss application of frost protection requirements.
- 4. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.
 no

***Note: Incomplete forms may be returned to the submitter with instruction to complete the form. Only completed forms can considered by the TAG.

DEPARTMENT OF LABOR AND INDUSTRY

3/25 <u>line #12</u> Remains tabled Struct. TAG 3/27 Structural TAG reviewed and rejected the CCP 4/22: 1309 TAG: remains tabled until 5/20 meeting 5/20:

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: C. Scott Anderson

Date: 7/8/24

Email address: c.scott.anderson@minneapolismn.gov

Telephone number: 612-246-7303

Firm/Association affiliation, if any: City of Minneapolis

Code or Rule Section: R403.1.4.1

Model Code: 2024 IRC

Topic of proposal: footing frost protection

Code or rule section to be changed: R403.1.4.1

Intended for Technical Advisory Group ("TAG"):

General Information	<u>Yes</u>	<u>No</u>	
A. Is the proposed change unique to the State of Minnesota?	\boxtimes		
B. Is the proposed change required due to climatic conditions of Minnesota?	\boxtimes		
C. Will the proposed change encourage more uniform enforcement?	\boxtimes		
D. Will the proposed change remedy a problem?	\boxtimes		
E. Does the proposal delete a current Minnesota Rule, chapter amendment?F. Would this proposed change be appropriate through the ICC code		\boxtimes	
development process?		\boxtimes	

Proposed Language

1. The proposed code change is meant to:

Change language contained the model code book? If so, list section(s). R403.1.4.1

Change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

delete language contained in the model code book? If so, list section(s).

delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

 \boxtimes add new language that is not found in the model code book or in Minnesota Rule. R403.1.4.1

- Is this proposed code change required by Minnesota Statute? If so, please provide the citation.
 No
- 3. Provide *specific* language you would like to see changed. Indicate proposed new words with <u>underlining</u> and strikethrough words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes.

R403.1.4.1 Frost protection.

Except where otherwise protected from frost, foundations and other permanent supports of *buildings* and *structures* shall be protected from frost by one or more of the following methods:

- 1. Extending below the frost line specified in Table R301.2 in accordance with 1303.1600.
- 2. Constructed in accordance with section R403.3
- 3. Constructing in accordance with ASCE 32.
- 4. Erecting on solid rock.
- 5. Constructing in accordance with Minnesota Rules, chapter 1303.

Exceptions: Free-standing Accessory Structures meeting all of the following conditions shall not be required to be protected:

- Protection of free standing accessory structures with an area of 600 square feet (56 m²) or less, of light frame construction, with an eave height of 10 feet (3048 mm) or less shall not be required.
- Protection of free standing accessory structures with an area of 400 square feet (37 m²) or less, of other than *light frame construction*, with an eave height of 10 feet (3048 mm) or less shall not be required.
- 1. <u>Classified as an IRC-4 structure</u>
- 2. Area of 1,000 square feet (56 m²) or less of *light-frame*
- 3. Eave height of 10 feet (3048 mm) or less.

Shallow foundation shall not bear on frozen soil unless such frozen condition is of a permanent character.

 Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
 No

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)

Modification of this section to correlate with similar provisions of section 1305.

The Mn amendment referencing to chapter 1303 should be deleted. There are no freestanding buildings identified in 1303. There is a reference to soils under slab on grade buildings that I believe is the intent of this reference so I have modified the model code language to match up with the current Mn allowance of 1,000 s.f. and deleted the allowance for other than light frame construction.

Deleted the model code exception and re-wrote to address current Mn construction practices and to coordinate with the requirements found in 1305 for similar structures.

2. Why is the proposed code change a reasonable solution? It addresses a life safety issue unique to cold weather climates. 3. What other factors should the TAG consider? None

Cost/Benefit Analysis

- Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible. This is an editorial change and should not impact the cost of construction. Structures are required to have foundations.
- If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible. No cost change
- If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
 NA
- Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.
 No
- 5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed \$25,000 for any one small business or small city (<u>Minn. Stat. § 14.127</u>)? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain. No

Regulatory Analysis

- 1. What parties or segments of industry are affected by this proposed code change? Architects, Contractors, Developers, Building Owners, Contractors, Building Officials
- Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.
- What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
 Potential conflicts in code requirements and possible miss application of frost protection requirements.
- 4. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.
 no

***Note: Incomplete forms may be returned to the submitter with instruction to complete the form. Only completed forms can considered by the TAG.

3/27 Structural TAG reviewed and rejected the CCP 4/22 <u>line #38</u> 1309 TAG: remains tabled until 5/20 meeting 5/20:

DEPARTMENT OF LABOR AND INDUSTRY

CODE CHANGE PROPOSAL FORM

(Must be submitted electronically)

Author/requestor: C. Scott Anderson

Date: 7/8/24

Email address: c.scott.anderson@minneapolismn.gov

Telephone number: 612-246-7303

Firm/Association affiliation, if any: City of Minneapolis

Code or Rule Section: R507.3.3

Model Code: 2024 IRC

Topic of proposal: footing frost protection

Code or rule section to be changed: R507.3.3

Intended for Technical Advisory Group ("TAG"):

General Information	<u>Yes</u>	<u>No</u>	
A. Is the proposed change unique to the State of Minnesota?	\boxtimes		
B. Is the proposed change required due to climatic conditions of Minnesota?	\boxtimes		
C. Will the proposed change encourage more uniform enforcement?	\boxtimes		
D. Will the proposed change remedy a problem?	\boxtimes		
 E. Does the proposal delete a current Minnesota Rule, chapter amendment? F. Would this proposed change be appropriate through the ICC code 		\boxtimes	
development process?		\boxtimes	

Proposed Language

1. The proposed code change is meant to:

Change language contained the model code book? If so, list section(s). R507.3.3

Change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

delete language contained in the model code book? If so, list section(s).

delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

 \boxtimes add new language that is not found in the model code book or in Minnesota Rule. R507.3.3

- Is this proposed code change required by Minnesota Statute? If so, please provide the citation.
 No
- 3. Provide *specific* language you would like to see changed. Indicate proposed new words with <u>underlining</u> and strikethrough words proposed for deletion. Include the entire code (sub) section or rule subpart that contains your proposed changes.

R507.3.3 Frost protection.

Where decks are attached to a frost-protected structure, deck footings shall be protected from frost by one or more of the following methods:

- 1. Extending below the frost line specified in Table R301.2 in accordance with 1303.1600.
- 2. Erecting on solid rock.
- 3. Other approved methods of frost protection
- Will this proposed code change impact other sections of a model code book or an amendment in Minnesota Rule? If so, please list the affected sections or rule parts. No

Need and Reason

1. Why is the proposed code change needed? Please provide a general explanation as well as a specific explanation for any changes to numerical values (heights, area, etc.)

Modification of this section to correlate with similar provisions of section 1309. Revised condition one to refer to Mn rule 1303 in lieu of the model code table.

- 2. Why is the proposed code change a reasonable solution? It addresses a life safety issue unique to cold weather climates.
- 3. What other factors should the TAG consider? None

Cost/Benefit Analysis

1. Will the proposed code change increase or decrease costs? Please explain and provide estimates if possible.

This is an editorial change and should not impact the cost of construction. Structures are required to have foundations.

- If there is an increased cost, will this cost be offset by a safety or other benefit? Please explain. If the benefit is quantifiable (for example energy savings), provide an estimate if possible. No cost change
- If there is a cost increase, who will bear the costs? This can include government units, businesses, and individuals.
 NA
- 4. Are there any enforcement or compliance cost increases or decreases with the proposed code change? Please explain.

No

5. Will the cost of complying with the proposed code change in the first year after the rule takes effect exceed \$25,000 for any one small business or small city (<u>Minn. Stat. § 14.127</u>)? A small business is any business that has less than 50 full-time employees. A small city is any statutory or home rule charter city that has less than ten full-time employees. Please explain.
No

Regulatory Analysis

- 1. What parties or segments of industry are affected by this proposed code change? Architects, Contractors, Developers, Building Owners, Contractors, Building Officials
- Can you think of other means or methods to achieve the purpose of the proposed code change? What might someone opposed to this code change suggest instead? Please explain what the alternatives are and why your proposed change is the preferred method or means to achieve the desired result.
 No
- What are the probable costs or consequences of not adopting the code change, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals?
 Potential conflicts in code requirements and possible miss application of frost protection requirements.
- 4. Are you aware of any federal or state regulation or requirement related to this proposed code change? If so, please list the federal or state regulation or requirement and your assessment of any differences between the proposed code change and the federal regulation or requirement.
 no

***Note: Incomplete forms may be returned to the submitter with instruction to complete the form. Only completed forms can considered by the TAG.